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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/571,887	03/13/2006	Masahiro Sasaura	14321.82	2670

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EXAMINER	
HITESHEW, FELISA CARLA	

ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
09/09/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/571,887	SASAURA ET AL.	
	Examiner	Art Unit	
	Felisa C. Hiteshew	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/9/07; 5/9/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The PTOL 1449 has been received, reviewed and considered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 61-236681.

JP '681 teaches a method and an apparatus for preparing a single crystal by heating up a raw material, comprising heating a crucible charged with a seed crystal and a small amount of a solid crystal material while continuously changing a relative positional relationship between said crucible and a heating electric furnace; and continuously feeding the solid crystal material to a single crystal melted and solidified in said crucible so as to manufacture the single crystal from the melted liquid. The heating furnace has a temperature distribution in which a temperature is at maximum at a center portion in a vertical . At the maximum temperature of the heating furnace, the solid crystal material can be melted into liquid. The single crystal is grown by moving

downward the crucible at a predetermined speed in the heating furnace having the above temperature distribution. JP' 681 also teaches a material passing tool being composed of one or more cones which are provided concentrically about a rotation axis of the rotating mechanism.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 2, 3-12 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 61-236681 in view of WO 1999/63132

JP '681 teaches a method and an apparatus for preparing a single crystal by heating up a raw material, comprising heating a crucible charged with a seed crystal and a small amount of a solid crystal material while continuously changing a relative positional relationship between said crucible and a heating electric furnace; and continuously feeding the solid crystal material to a single crystal melted and solidified in said crucible so as to manufacture the single crystal from the melted liquid. The heating furnace has a temperature distribution in which a temperature is at maximum at a center portion in a vertical . At the maximum temperature of the heating furnace, the solid crystal material can be melted into liquid. The single crystal is grown by moving downward the crucible at a predetermined speed in the heating furnace having the above temperature distribution. JP' 681 also teaches a material passing tool being composed of one or more cones ("funnel-shaped") which are provided concentrically about a rotation axis of the rotating mechanism.

WO 1999/63132 teaches an apparatus for manufacturing single crystals, using a pull-down method, wherein a raw powder material is supplied onto a premelting plate in an electric furnace by a raw powder material supply unit to melt the material thereon and form a material melted-liquid, which is introduced into a crucible continuously by

dropping, to grow crystals in a tank. WO "132 produces lithium and niobium containing single crystals.

The difference being that JP '681 does not exactly teach a method for producing crystals, wherein the temperature in the higher area is a soaking temperature, an overheating temperature, and wherein a major component of the crystal is composed of oxide or carbonate of Ia and Va groups (e.g. Li, K,Nb or Ta). JP '681 also does not teach an apparatus having a reflection plate, which has a heater and a plurality of grooves that moves independently of the crucible. However, in the absence of unobvious results, it would have been obvious to one of ordinary skill in the art to modify and optimize the process and apparatus limitation in order to ensure proper orientation. It would be easy for a person skilled in the art to conceive of manufacturing the compound oxide described in WO 1999/631132, in order to resolve the common technical problem since it uses lithium niobate and lithium tantalate. It also would have been obvious to one of ordinary skill in the art to utilize the conical material passing tool being "trumpet" or "funnel" shaped, since these shapes are conical naturally. The motivation being to provide, at low cost, a method and apparatus for manufacturing an elongate and large high-quality single crystal which is free of impurities.

A reference is good not only for what it teaches by direct anticipation but also for what one of ordinary skill might reasonably infer from the teachings. In re Opprect 12 USPQ 2d 1235, 1236 (CAFC 1989); In re Bode 193 USPQ 12; In re Lamberti 192 USPQ 278; In re Bozek 163 USPQ 545, 549 (CCPA 1969); In re Van Mater 144 USPQ

421; In re Jacoby 135 USPQ 317; In re LeGrice 133 USPQ 365; In re Preda 159 USPQ 342 (CCPA 1968).

Allowable Subject Matter

8. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

9. Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach nor render obvious the instantly claimed invention. There is no teaching in the art to perform the process/apparatus that is now claimed. The prior art does not teach an apparatus for producing crystals wherein the raw material supply apparatuses are placed for each or multiple re-supply raw materials having different compositions and each supply amount of the re-supply raw materials can be controlled, as stated in the instant invention. There is no motivation in the art to change the prior art's teaching of to arrive at the instantly claimed process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Felisa Hiteshew whose telephone number is (571) 272-1463. The examiner can normally be reached on Mondays through Thursday from 5:30 AM to 4:00 PM with Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mikhail Kornakov, can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-1463.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system. see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866- 217-9197 (toll-free).

/Felisa C. Hiteshew/
Primary Examiner, Art Unit 1792